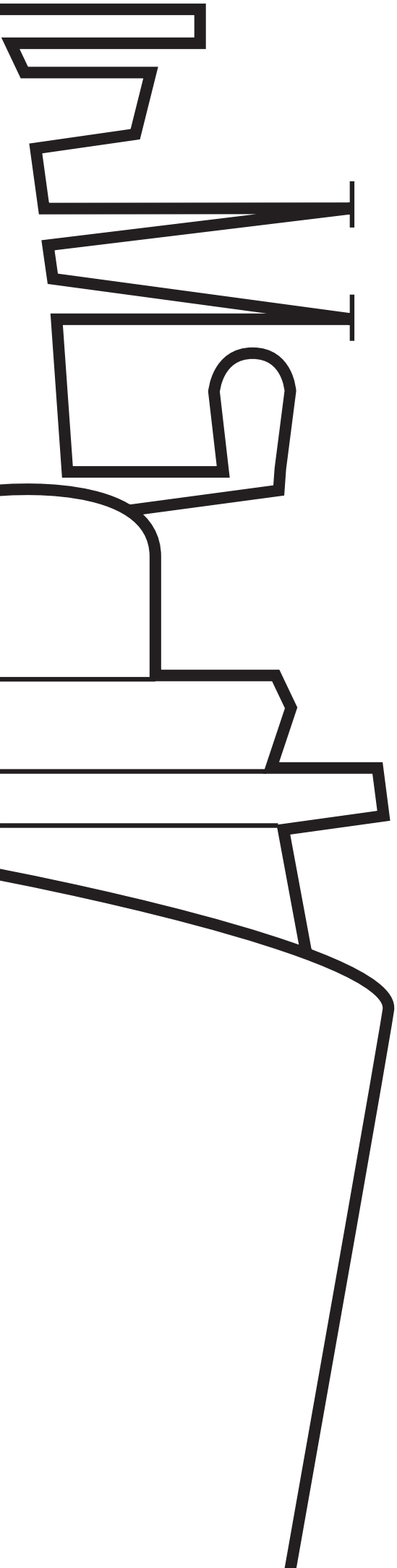


Rules and Regulations for the Classification of Naval Ships, January 2005

Notice No. 2

Effective Date of Latest Amendments:

See page 1

Issue date: February 2006

Lloyd's Register

RULES AND REGULATIONS FOR THE CLASSIFICATION OF NAVAL SHIPS, *January 2005*

Notice No. 2

This Notice contains amendments within the following Sections of the *Rules and Regulations for the Classification of Naval Ships, January 2005.* The amendments are effective on the dates shown:

Volume	***Part***	***Chapter***	***Section***	***Effective date***
1	1	2	4	Corrigenda
1	1	3	1	Corrigendum
1	3	2	1, 8	Corrigenda
1	4	1	6, 7	Corrigenda
1	4	2	5	Corrigenda
1	4	3	3, 5	Corrigenda
1	5	3	1, 2, 3, 5, 6	Corrigenda
1	6	3	3, 4	Corrigenda
1	6	6	4, 5, 6	Corrigenda
2	1	2	1, 4, 5	Corrigenda
2	2	1	4	Corrigendum
2	4	4	5	Corrigenda
2	7	1	14, 16	Corrigenda
2	7	4	2	Corrigenda
2	9	1	2, 5	Corrigenda
2	10	1	1, 7	Corrigenda
3	1	7	6, 8, 9	Corrigenda
3	2	2	3	Corrigenda

It will be noted that the amendments also include corrigenda, which are effective from the date of this Notice.

The *Rules and Regulations for the Classification of Naval Ships, January 2005* are to be read in conjunction with this Notice No. 2. The status of the Rules is now:

Rules for Naval Ships	Effective date:	January 2005
Notice No. 1	Effective dates:	1 January 2005, 1 July 2005 & Corrigenda
Notice No. 2	Effective date:	Corrigenda

Volume 1, Part 1, Chapter 2
Classification Regulations

CORRIGENDA

■ *Section 4*
Surveys - General

4.5 Existing ships - Periodical Surveys

~~*4.5.17* If any examination during Continuous Survey reveals defects, further parts are to opened up and examined as considered necessary by the Surveyor, and the defects are to be made good to his satisfaction.~~

Existing paragraphs 4.5.18 to 4.5.23 are to be renumbered 4.5.17 to 4.5.22.

Volume 1, Part 1, Chapter 3
Periodical Survey Regulations

CORRIGENDUM

■ *Section 1*
General

1.1 Frequency of surveys

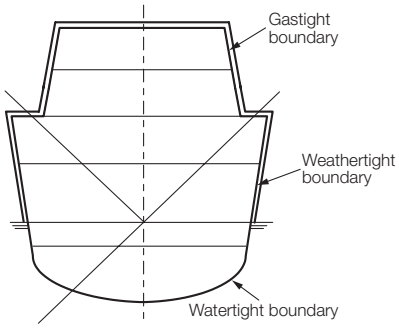
1.1.2 When it has been agreed that the complete survey of the hull and machinery may be carried out on the Continuous Survey basis, all compartments of the hull and all items of machinery are to opened for survey in rotation to ensure that the interval between consecutive examinations of each part will not exceed six years (*see* Ch 2,4.5.10 and ~~4.5.17~~ 4.5.11).

Volume 1, Part 3, Chapter 2
Ship Design

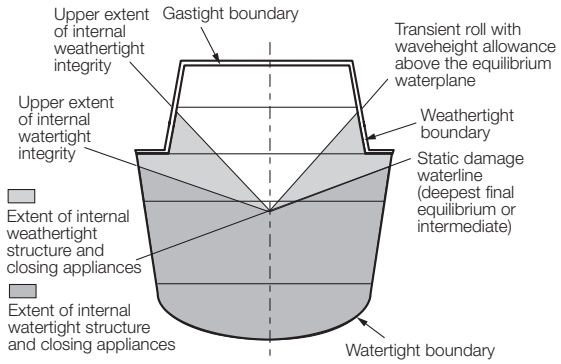
CORRIGENDA

■ *Section 1*
General

1.3 Watertight and weathertight integrity



(a ~~b~~) Intact stability



(b) Damage stability

Fig. 2.1.2 Commonly used naval standard

■ *Section 8*
Pillars and pillar bulkheads

8.3 Alignment and arrangement

8.3.2 Wherever possible, deck pillars are to be fitted in the same vertical line as pillars above and below, and effective arrangements are to be made to distribute the load at the heads and heels of all pillars.

Volume 1, Part 4, Chapter 1
Military Design

CORRIGENDA

■ *Section 6*
Design guidance for magazines

6.1 General

(Part only shown)

6.1.2 A statement of magazine requirements should be defined and should ~~to~~ include:

6.3 Arrangement of magazines

6.3.8 Integral magazines and small magazines containing munitions may be sited adjacent to the following compartments of moderate fire risk provided that are separated by an A-30 fire division~~.~~ :

6.3.17 Detonator ~~Lockers~~ lockers are not to be sited less than 100 mm from the compartment boundary, measured from the bulkhead plating and are not to be secured to the ships side. The free air distance between Detonator ~~Lockers~~ lockers is not to be less than 300 mm. Where 300 mm cannot be achieved, they may be permitted with 100 mm air gap, provided that an 8 mm steel plate is fitted between each locker.

■ *Section 7*
Design guidance for nuclear, biological and chemical defence

7.2 Definitions

7.2.3 An airlock is a compartment with two doors between the toxic free area and the source of the NBC hazard or cleansing station. Airlocks are normally purged with clean air to allow personnel to pass from one area to another without contaminants entering the toxic ~~foc~~ free area.

Volume 1, Part 4, Chapter 2
Military Load Specification

CORRIGENDA

■ *Section 5*
Underwater explosion (shock)

5.5 Design guidance for level SH1

5.5.11 Access holes in all primary framing members are to be avoided in areas of high shear stress. Where they are essential to the operation of the ship they are to be circular and fitted with appropriate stiffening or compensation.

5.6 Design guidance for level SH3

5.6.5 Shell frames and deck beams are to be fitted in such a way as to minimise misalignment. The frames are to be fitted within a tolerance of $0{,}3t_{fl}$ median line up to a maximum of 3,0 mm where t_{fl} is the greater thickness of the frames being connected. Where this is not possible, the frame is to be released over $20t_{fl}$ and realigned.

Volume 1, Part 4, Chapter 3
Special Features

CORRIGENDA

■ *Section 3*
Bow doors

3.2 General

3.2.1 The attention of Owners and Builder~~'~~s is drawn to the additional statutory regulations for bow doors that may be required by the Naval Authority.

■ *Section 5*
Movable decks, lifts and ramps

5.7 Aircraft lifts

5.7.1 The aircraft lift platform deck alignment is to be provided by keeps at the flight deck and stops at the ~~hanger~~ hangar deck.

5.7.2 If the ship has an underwater shock notation, latches are also to be provided at the flight and ~~hanger~~ hangar deck levels to restrain the aircraft lift platform when stationary.

Volume 1, Part 5, Chapter 3
Local Design Loads

CORRIGENDA

■ *Section 1*
Introduction

1.2 Environmental conditions

(Part only shown)

1.2.2 The wave height factor for local loads, f_{Hs}, is dependant on the service area notation and is to be taken as follows:

f_{Hs} = 1,0 for SA1 service area notation, i.e. unrestricted sea-going service

otherwise

$$f_{Hs} = \frac{\text{design wave height for the restricted service}}{\text{design wave height for unrestricted service}}$$

■ *Section 2*
Motion response

2.3 Design accelerations

(Part only shown)

2.3.2 The following formulae are given as guidance for the components of acceleration due to ship motions and apply for ships with a length exceeding 50 m and where the speed is such that the ship is operating within the displacement mode based on normal ship service speed. Typically this will apply to most ships with displacement hull forms that are not designed to operate in the planing regime.

■ *Section 3*
Loads on shell envelope

3.3 Hydrostatic pressure on the shell plating, P_h

Table 3.3.1 Shell envelope pressure, P_s

Vertical location i.e. z value	Shell envelope pressure, P_s kN/m^2
for $z \le T_x + z_k P_h + P_w$ i.e. up to the design waterline	$P_h + P_w$
At $z = T_x + z_k + H_w$	P_d
At $z \ge T_x + z_k + 1{,}5H_w$	$0{,}5P_d$
Symbols	
P_h is the hydrostatic pressure, *see* 3.3 P_w is the hydrodynamic wave pressure, *see* 3.4 P_d is the weather deck pressure, *see* 3.5.2 H_w is the nominal wave limit height, *see* 3.4.4 P_h and P_w are to be derived at the appropriate vertical position, z T_x, z and z_k are defined in 1.3	
NOTE Pressure values at other z values are to be derived by interpolation.	

Table 3.3.2 Exposed/weather deck pressure, P_{wd}

Vertical location i.e. z value	Exposed/weather deck pressure, P_{wd} kN/m^2
for $z \le T_x + z_k$ i.e. up to the design waterline	$P_h + P_w$
At $z = T_x + z_k + 0{,}5H_w$	P_d
At $z = T_x + z_k + 1{,}0H_w$	P_d
At $z \ge T_x + z_k + 1{,}5H_w$	$0{,}5P_d$
Symbols	
P_h is the hydrostatic pressure, *see* 3.3 P_w is the hydrodynamic wave pressure, *see* 3.4 P_d is the weather deck pressure, *see* 3.5.2 H_w is the nominal wave limit height, *see* 3.4.4 P_h and P_w are all taken at the appropriate vertical position, z T_x, z and z_k are defined in 1.3	
NOTE Pressure values at other z values are to be derived by interpolation.	

■ *Section 5*
Local design loads for decks and bulkheads

5.8 Design pressures for watertight and deep tank bulkheads and boundaries

(Part only shown)

5.8.1 The design normal pressure for bulkhead plating with stiffeners is to be considered separately for the plating and the stiffeners. The design normal pressure for the plating, P_{bhp}, is to be taken as follows:

Deep Tank

$\rho g\,(H_{tk} - z_p)$ kN/m^2

WT sub-division based on the head normal to the line of watertight integrity

maximum of

$10((H_{da} - z_p)\,\mathrm{Cos}\,\theta + y_p\,\mathrm{Sin}\,\theta)$ kN/m^2

$10(H_{da} - z_p)$ kN/m^2

(Part only shown)

5.8.2 The design normal pressure for the stiffener, P_{bhs}, is to be taken as follows:

Deep Tank

$\rho g\,(H_{tk} - z_s)$ kN/m^2 (Deep Tank)

WT sub-division

maximum of:

$10((H_{da} - z_s)\,\mathrm{Cos}\,\theta + y_s\,\mathrm{Sin}\,\theta)$ kN/m^2

$10(H_{da} - z_s)$ kN/m^2

■ *Section 6*
Other local loads

6.2 Loads for ramps and lifts, P_{ra}

6.2.3 Where the lift or ramp is designed to operate totally or partially under water, then due consideration is to be taken of the additional forces applied to the lift or ramp as a direct consequence of the water environment, e.g. added mass and velocity dependant damping forces.

Volume 1, Part 6, Chapter 3
Scantling Determination

CORRIGENDA

■ *Section 3*
NS1 scantling determination

3.1 General

3.1.2 The scantlings given in this Section are based ~~in~~ on the assumption that there is negligible loss in strength by corrosion.

3.10 Shell envelope framing

Table 3.3.1 Shell envelope plating (*conclusion*) *(Part only shown)*

Symbols	
F_B, F_D are as defined in 3.6	s_1 = s, but is not to be taken less than s_b
L_R, D, T, as defined in Pt 3, Ch1,5.2	s_b = 600mm fwd of $0{,}95L_R$
L_1, L_2, ρ, s, S, f, k_L, k_s are as defined in 3.2.1	= 700mm $0{,}95L_R$ to $0{,}7L_R$
C_{WL}= a wave head in metres = $0{,}0771L_R\, e^{-0{,}0044L_R}$	= 700mm $0{,}7L_R$ to $0{,}05L_R$
Where $L_R > 227$ m, C_{WL} is not to be taken less than 6,446 m	= 600mm aft of $0{,}05L_R$
h_{T1} = $T + C_{WL}$, ~~m~~ in metres but need not be taken greater than $1{,}36T$ m	F_M = the greater of F_B and F_D
h_{T2} = (T + 0,5 C_{WL}), in metres but need not be taken greater than $1{,}2T$ m	e = base of natural logarithms, 2,7183

3.12 Deck structures

Table 3.3.3 Shell envelope framing forward and aft **(***Part only shown)*

Symbols	
L_1, L_2, s, k_s as defined in 3.2.1	h_{T1} = ($T - z + f_L\, f_{cw}\, C_{WL}$) F_λ below T
L_R, D, T as defined in Pt 3, Ch 1,5.2	= $f_L\, f_{cw}\, C_{WL}$, F_λ above T but not less than $f_L\, F_\lambda\, L_1/70$
C_{WL} as defined in Table 3.3.1	f_{cw} = 0,5 at baseline
F_λ as defined in Table 3.3.2	= 1,0 at $0{,}65D_2$ and above
l_e = as defined in Ch 2,2.6 but is to be taken not less than 1,5 m	Intermediate positions by interpolation (*see* Note ~~6~~ 5)
D_2 = $T + H_b$ metres, where H_b is the minimum bow height, in metres, obtained from Pt 3, Ch 2,5.3	f_1 = 3,5 forward and 3,2 aft
H = vertical framing depth, in metres, of sideframes, but is to be taken not less than 2,5 m (*see* Note 1)	F_s = fatigue factor for side longitudinals for built symmetric sections, flat bars, bulbs and T bars
S_1 = vertical spacing of peak stringers or height of lower deck above the peak, in metres	= 1,05 at keel, 1,1 at T, 1,0 at $1{,}6T$ and above for angle bars
S_2 = vertical spacing of panting stringers, in metres	= $0{,}5\left(1 + \frac{1{,}1}{k_s}\right)$ at keel
C = end connection factor, *see* Table 3.3.2	= $\frac{1{,}1}{k_s}$ at $\frac{D}{2}$
f_L = 1,32 aft of $0{,}15L_R$	= 1,0 at $1{,}6T$ and above
= 1,0 from $0{,}2L_R$ to $0{,}8L_R$	built asymmetric sections will be specially considered.
= 1,71 fwd of $0{,}85L_R$	Intermediate values by linear interpolation
Intermediate positions by interpolation	
z = height above baseline in metres	

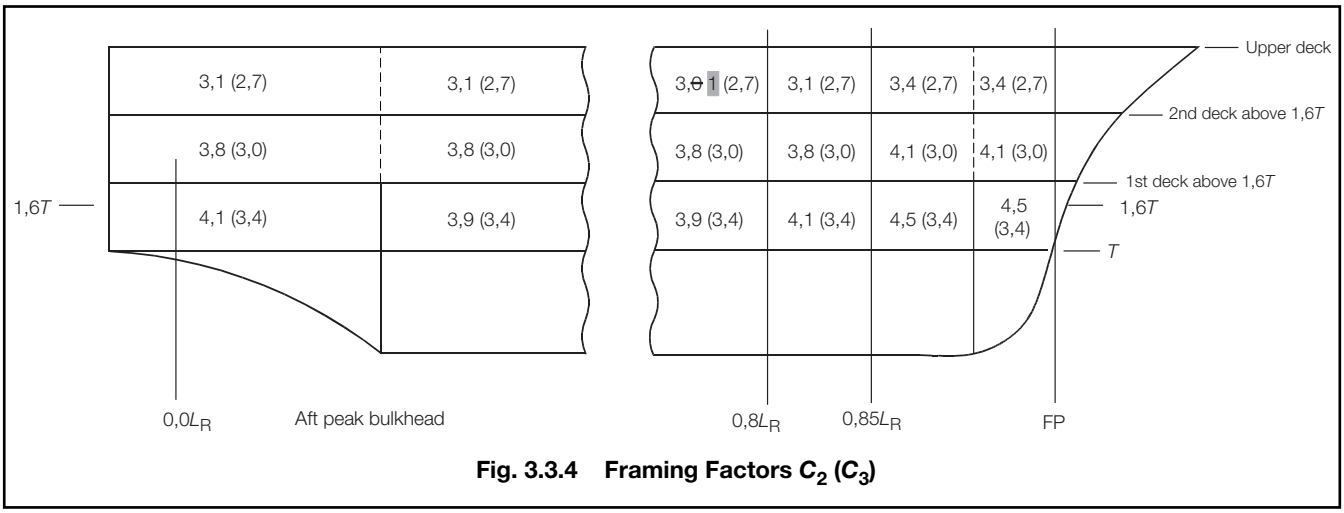


Fig. 3.3.4 Framing Factors C_2 (C_3)

3.15 Fore peak structure

Table 3.3.14 Fore peak structure *(Part only shown)*

NOTES
For horizontal flats supporting vertical webs in the fore peak tank the thickness of the flat in the web is to comply with the requirements of $t = a/(80 + 20a/b)\sqrt{k_s}$ for horizontal stiffening or $t = a/(73 + 27(a/b)^2)\sqrt{k_s}$ for vertical stiffening

where
a is the lesser dimension of the unstiffened plate panel.
b is the greater dimension of the unstiffened plate panel.

■ *Section 4*
NS2 and NS3 scantling determination

4.7 Deck structures

Table 3.4.4 Watertight and deep tank bulkhead scantlings *(Part only shown)*

Symbols	
P_{bhp} and P_{bhs}	are the watertight bulkhead and deep tank pressure values for the plate panel and stiffener respectively, as defined in Pt 5, Ch 3,5.5.
P_{bhp} and P_{bhs}	are the pressure values for the plate panel and stiffeners of the collision bulkhead are defined in Pt 5, Ch 3,5.9

Volume 1, Part 6, Chapter 6
Material and Welding Requirements

CORRIGENDA

■ *Section 4*
Welded joints and connections

4.16 Intersection of primary and secondary members

Table 6.4.5 Weld connection of strength deck plating to sheerstrake *(Part only shown)*

Item	Stringer plate thickness, mm	Weld type
1	$t \leq 15$	Single vee preparation to provide included angle of 45° with root $R \leq {}^1/_3 t$ in conjunction with a continuous fillet weld having a weld factor of 0,39
2	$15 < t \leq 25$	Double vee preparation to provide included angle of 60° with root $R \leq {}^1/_3 t$ in conjunction with a continuous fillet weld having a weld factor of 0,39
3	$t > 25$	Triple vee preparation to provide included angles of 50° with root $R \leq {}^1/_3 t$ but not to exceed 10 mm

■ *Section 5*
Construction details

5.3 Arrangement at intersection of primary and secondary members

Table 6.5.2 Permissible stresses

Item	Direct stress N/mm	Shear stress N/mm
Primary web plate stiffener adjacent to connection with secondary member	157	—
Welded connection of primary member web plate stiffener to secondary member:		
Double continuous fillet	117,7	—
Automatic deep penetration	157	—
Lug or collar plate and weld connection	—	98,1

■ *Section 6*
Inspection and testing procedures

6.8 Gastight testing

6.8.5 If the pressure drop specified in ~~5.9.2~~ 6.8.3 occurs, the compartment is to be inspected for leaks and the test repeated until the specified standard is specified.

Volume 2, Part 1, Chapter 2
Requirements for Design, Construction, Installation and Sea Trials of Engineering Systems

CORRIGENDA

■ *Section 1*
Scope

1.1 Application

1.1.2 Detailed and additional requirements for control engineering and electrical engineering systems are contained in Part 9 and Part 10 respectively.

■ *Section 4*
Operating conditions

~~**4.5 Ambient operating conditions**~~

~~*4.5.1* Main and essential auxiliary machinery and equipment is to be capable of operating satisfactorily under the conditions shown in Table 2.4.1.~~

Existing paragraphs 4.6 to 4.20 are to be renumbered 4.5 to 4.19.

Table 2.4.1 Ambient operating conditions

Air		
Installations, Components	**Location, arrangement**	**Temperature range (ºC)**
Machinery and electrical installations, *see* Note 1	In enclosed spaces	0 to +45, *see* Note 2
	On machinery components, boilers, in spaces subject to higher and lower temperatures	According to specific conditions, *see* Note 3
	On the open deck	-25 to +45, *see* Note 2
Water		
Coolant		**Temperature (ºC)**
Sea water or charge air coolant inlet to charge air cooler		+32, *see* Note 2

NOTES
1. Electronic appliances are to be suitable for proper operation even with an air temperature of +55ºC.
2. For ships intended to be classed for restricted service, a deviation from the temperatures stated may be considered.
3. Details of local environmental conditions are stated in Annex B of IEC 60092: *Electrical installations in ships - Part 101: Definitions and general requirements.*

Existing Tables 2.4.2, 2.4.3 and 2.4.4 are to be renumbered 2.4.1, 2.4.2 and 2.4.3 respectively.

~~**4.9**~~ **4.8 Military requirements**

~~*4.9.6*~~ *4.8.6* Systems provided to fulfil military requirements, e.g. weapons or combat systems, are to be arranged such that their operation or failure will not adversely affect the operation of Mobility, Ship Type or Ancillary category systems covered by these~~s~~ Rules.

■ *Section 5*
Machinery space arrangements

5.8 Means of escape

(Part only shown)

5.8.1 Except as permitted in 5.8.2, two means of escape are to be provided from each machinery space of Category A. In particular, one of the following provisions are to be complied with:

Alternative arrangements ~~is~~ in accordance with the requirements of the Naval Authority may also be acceptable.

5.9 Communications

5.9.1 At ~~leace~~ least two independent means of communication are to be provided between the bridge and engine room control station from which the engines are normally controlled.

Volume 2, Part 2, Chapter 1
Diesel Engines

CORRIGENDUM

■ *Section 4*
Crankshaft design

4.4 Nominal stresses

(Part only shown)

4.4.9 Nominal alternating torsional stress:

$$T_a = \left((18{,}6 - 0{,}0132D_e) \times \frac{\sigma_u + 160}{560}\right) \times Z_e \text{ N/mm}$$

Volume 2, Part 4, Chapter 4
Podded Propulsion Units

CORRIGENDUM

■ *Section 5*
Structure design and construction requirements

5.2 Hull support structure

Table 4.5.1 Podded propulsion unit structural requirements *(Part only shown)*

Symbols		
f	=	panel aspect ratio correction factor = ~~$[(1{,}1 - s/(2500S))]$~~ $[1{,}1 - s/(2500S)]$
h_7	=	$(T + C_w + 0.014V^2)$
k	=	local higher tensile steel factor, as in Vol 1, Pt 6, Ch 2
l_e	=	effective span of the member under consideration, in metres
s	=	the frame spacing of secondary members, in mm
C_w	=	design wave amplitude, in metres, as in Table 3.2.1 in Vol 1, Pt 5, Ch 3
R_g	=	mean radius of pod body tube, in metres
S	=	the spacing of primary members, in metres
T	=	the vessel scantling draft, in metres, as in Vol 1, Pt 3, Ch 1,5.2
V	=	maximum design speed, in knots, as in Vol 1, Pt 3, Ch 3,2.11

Volume 2, Part 7, Chapter 1
Piping Design Requirements

CORRIGENDA

■ *Section 14*
Expansion pieces

14.1 Design and construction requirements

14.1.1 The design and construction of expansion pieces ~~for~~ intended for installation in piping systems is to be in accordance with an acceptable standard or design code appropriate to the piping system. Where suitable standards are not available, details of materials and construction are to be submitted for consideration. Where expansion pieces are fitted, the requirements of this section are to be satisfied.

■ *Section 16*
Testing

16.2 Testing after assembly on board

16.2.2 Where pipes specified in 16.1.1 are butt welded together during assembly on board, they are to be tested by hydraulic pressure in accordance with the requirements of ~~8.1~~ 16.1 after welding. The pipe lengths may be insulated, except in way of the joints made during installation and before the hydraulic test is carried out.

Volume 2, Part 7, Chapter 4
Aircraft/Helicopter/Vehicle Fuel Piping and Arrangements

CORRIGENDUM

■ *Section 2*
Refuelling facilities

2.1 Fuel storage

2.1.12 The air pipe for the cofferdam space is to be led to the open in a safe space and fitted with an approved air pipe head having a wire gauze diaphragm of incorrodible material.

Volume 2, Part 9, Chapter 1
Control Engineering Systems

CORRIGENDA

■ *Section 2*
Essential features for control, alarm and safety systems

2.9 Programmable electronic systems - General requirements

2.9.6 Emergency stops are to be hard-wired and independent of any programmable electronic equipment. Alternatively, the system providing emergency stop functions is to comply with the requirements of 2.11.2 and/or ~~2.11.8~~ 2.11.7.

2.9.21 Software lifecycle activities, e.g. design, development, supply and maintenance, are to be carried out in accordance with an acceptable quality management system. Software quality plans are to be submitted. These are to demonstrate that the provisions of ISO/IEC 90003:2004, ~~Software engineering – Guidelines for the application of ISO 9001:2000 to computer software~~ *Software engineering – Guidelines for the application of ISO 9001:2000 to computer software,* or an acceptable International, National or naval standard, are incorporated. The plans are to define responsibilities for the lifecycle activities, including verification, validation, module testing and integration with other components or systems.

2.11 Programmable electronic systems - Additional requirements for Mobility category and safety critical systems

(Part only shown)

2.11.1 The requirements of 2.11.2 to ~~2.11.10~~ 2.11.9 are to be complied with where control, alarm or safety functions for Mobility category, or safety critical systems, incorporate programmable electronic equipment.

2.12 Programmable electronic systems - Additional requirements for integrated systems

2.12.1 The requirements of 2.12.2 to ~~2.12.5~~ 2.12.7 apply to integrated systems such as those providing a grouping of fire safety or crew and embarked personnel emergency safety functions (*see* Pt 10, Ch 1), power management systems and integrated control, alarm and monitoring systems for machinery, and include the interconnection of systems capable of independent operation to provide co-ordinated functions or common user interfaces.

2.12.7 Where information is required by the Rules or by Naval Authority requirements to be continuously displayed, the system configuration is to be such that the information may be viewed without manual intervention, e.g. the selection of a particular screen page or mode of operation. *See also* ~~2.9.18~~ 2.9.19 to 2.9.20.

■ *Section 5*
Integrated computer control - ICC notation

5.2 General requirements

5.2.3 Alarm and indication functions required by 2.4 are to be provided by the integrated computer control system in response to the activation of any safety function for associated machinery. Systems providing the safety functions are in general to be independent of the integrated computer system. *See also* ~~2.11.8~~ 2.11.7.

5.3 Operator stations

5.3.1 Each operator station allowing control of equipment is to be provided with a minimum of two multi-function display and control units. The number of units is to be sufficient to allow simultaneous access to control and monitoring functions required by 5.2.2 to 5.2.4. *See also* ~~2.9.18~~ 2.9.19 to 2.9.20.

Volume 2, Part 10, Chapter 1
Electrical Engineering

CORRIGENDA

■ *Section 1*
General requirements

1.6 Design and construction

1.6.3 Electrical equipment is to be suitable for its intended purpose in all conditions in which it is expected to operate. Equipment is to be designed and constructed in accordance with appropriate international standards or, in the absence of such, relevant national standards or naval publications acceptable to LR and the Navy or Naval Authority. The design and construction is to take account of both functional and environmental requirements. For details of marine environmental conditions, reference should be made to Annex B of IEC 60092: *Electrical installations in ships - Part 101: Definitions and general requirements.*

1.7 Quality of power supplies

1.7.2 Unless specified otherwise, a.c. electrical equipment is to operate satisfactorily with the following simultaneous variations, from their nominal value, when measured at the consumer input terminals:

(a) voltage:
permanent variations +6%, -10%
transient variations due to step changes in load +20%, -15% ~~±20%~~
recovery time 1,5 seconds

(b) frequency:
permanent variations ±5%
transient variations due to step changes in load ±10%
recovery time 5 seconds
A maximum rate of change of frequency not exceeding ±1,5 Hz per second during cyclic frequency fluctuations.

1.9 Ambient reference ~~and operating~~ conditions

~~*1.9.3* Main and essential auxiliary machinery and equipment is to operate satisfactorily under the conditions shown in Pt 1, Ch 2,4.5. Electronic appliances are to be suitable for proper operation even with an air temperature of 55ºC.~~

~~NOTE:~~
~~Details of local environmental conditions are stated in Annex B of IEC 60092: *Electrical installations in ships – Part 101: Definitions and general requirements.*~~

~~*1.9.4* Where electrical equipment is installed within environmentally controlled spaces the ambient temperature for which the equipment is suitable for operation at its rated capacity may be reduced to a value not less than 35°C provided:~~

- ~~the equipment is not for use for emergency services and is located outside of machinery space(s);~~
- ~~temperature control is achieved by at least two cooling units so arranged that in the event of loss of one cooling unit, for any reason, the remaining unit(s) is capable of satisfactorily maintaining the design temperature;~~
- ~~the equipment is able to be initially set to work safely within a 45°C ambient temperature until such a time that the lesser ambient temperature may be achieved; the cooling equipment is to be rated for a 45°C ambient temperature;~~
- ~~alarms are provided, at a continually attended control station, to indicate any malfunction of the cooling units.~~

~~*See also* Pt 9, Ch 1, 1.3.3.~~

~~*1.9.5* Where equipment is to comply with 1.8.4, it is to be ensured that electrical cables for their entire length are adequately rated for the maximum ambient temperature to which they are exposed along their length.~~

~~*1.9.6* Equipment used for cooling and maintaining the lesser ambient temperature in accordance with 1.8.4 are considered essential services and are to satisfy the requirements of 5.2.2.~~

■ *Section 7*
Switchgear and control gear assemblies

7.12 Instrument~~s~~ scales

Volume 3, Part 1, Chapter 7
Replenishment at Sea (RAS) Systems

CORRIGENDA

■ *Section 6*
Ship and arrangement requirements

6.1 Location of RAS stations and equipment

6.1.5 Clear areas are to be provided at each RAS station. Sufficient clear area to enable safe and efficient operation of equipment is to be provided. The area available is to recognise the equipment manufacturer's recommendations for operations and is to be contained within 30º fore and aft of the normal transverse at the RAS station.

■ *Section 8*
RAS station requirements

8.1 General

8.1.7 Where space allows, provision is to be made for the rigging of a safety wire to which life lines can be attached. Note, such lines are to be provided where the RAS station is designed for operations that require guard rails to struck, *see* 8.1.2.

■ *Section 9*
Transfer of liquids

9.2 Filling connections and arrangements

9.2.12 The arrangements for transferring lubricating oils are to be such that they permit the use of oil renovation systems whilst RAS operations are being carried out.

Volume 3, Part 2, Chapter 2
Environmental Protection

CORRIGENDA

■ *Section 3*
Supplementary characters

3.3 Protected fuel tanks - F character

3.3.2 Oil tanks are to be located as follows:

- oil tanks with a capacity of less than 1000 m^3 are to be located at least 0,76 m from the ship's side or bottom plating; and
- oil tanks with a capacity of 1000 m^3 and over are to be located at least 1,5 m from the ship's side or bottom plating.

Cross-references

Volume 1, Part 4, Chapter 1

2.2.7 Reference to paragraph Vol 2, Pt 1, Ch 2,4.9 *now reads* Vol 2, Pt 1, Ch 2,4.8.

Volume 1, Part 4, Chapter 2

5.3.4 Reference to paragraph Vol 2, Pt 1, Ch 2,4.11 *now reads* Vol 2, Pt 1, Ch 2,4.10.

Volume 2, Part 1, Chapter 2

3.3.10 Reference to sub-Section 4.12 *now reads* 4.11.

3.3.11 Reference to sub-Section 4.11 *now reads* 4.10.

3.3.12 Reference to sub-Section 4.10 *now reads* 4.9.

3.3.13 Reference to sub-Section 4.13 *now reads* 4.12.

4.5.1 Reference to Table 2.4.2 *now reads* Table 2.4.1.

4.5.2 Reference to Table 2.4.2 *now reads* Table 2.4.1.

4.5.3 Reference to Table 2.4.2 *now reads* Table 2.4.1.

4.5.4 Reference to Table 2.4.2 *now reads* Table 2.4.1.

4.6.2 Reference to paragraph 4.7.1 *now reads* 4.6.1.

4.9.3 Reference to Table 2.4.3 *now reads* Table 2.4.2.

4.10.1 Reference to paragraphs 4.11.2 to 4.11.27 *now reads* 4.10.2 to 4.10.27.

4.10.2 Reference to paragraph 4.11.1 *now reads* 4.10.1.

4.10.4 Reference to paragraph 4.11.5 *now reads* 4.10.5.
Reference to paragraph 4.11.27 *now reads* 4.10.27.

4.11.1 Reference to paragraphs 4.12.2 to 4.12.14 *now reads* 4.11.2 to 4.11.14.

4.15.1 Reference to paragraphs 4.16.2 to 4.16.4 *now reads* 4.15.2 to 4.15.4.

4.15.4 Reference to paragraph 4.16.2 *now reads* 4.15.2.

4.16.3 Reference to sub-Section 4.16 *now reads* 4.15.

4.19.2 Reference to Table 2.4.4 *now reads* Table 2.4.3.

4.19.4 Reference to paragraph 4.20.1 *now reads* 4.19.1.

5.4.1 Reference to Table 2.4.2 *now reads* Table 2.4.1.

Volume 2, Part 2, Chapter 1

1.4.1 Reference to Pt 1, Ch 2, Table 2.4.2 *now reads* Pt 1, Ch 2, Table 2.4.1.

8.2.6 Reference to paragraph Pt 1, Ch 2,4.15 *now reads* Pt 1, Ch 2,4.14.

Volume 2, Part 2, Chapter 2

1.5.1 Reference to Pt 1, Ch 2, Table 2.4.2 *now reads* Pt 1, Ch 2, Table 2.4.1.

Volume 2, Part 2, Chapter 3

1.4.1 Reference to Pt 1, Ch 2, Table 2.4.2 *now reads* Pt 1, Ch 2, Table 2.4.1.

Volume 2, Part 4, Chapter 4

6.8.2 Reference to sub-Section Pt 1, Ch 2,4.6 *now reads* Pt 1, Ch 2,4.5.

Volume 2, Part 7, Chapter 1

13.2.3 Reference to sub-Section Pt 1, Ch 2,4.9 *now reads* Pt 1, Ch 2,4.8.
Reference to sub-Section Pt 1, Ch 2,4.11 *now reads* Pt 1, Ch 2,4.10.

Volume 2, Part 7, Chapter 3

2.3.3 Reference to sub-Section Pt 1, Ch 2,4.6 *now reads* Pt 1, Ch 2,4.5.

8.5.1 Reference to sub-Section Pt 1, Ch 2,4.6 *now reads* Pt 1, Ch 2,4.5.

Volume 2, Part 7, Chapter 4

2.2.12 Reference to Pt 1, Ch 2,4.19 *now reads* Pt 1, Ch 2,4.18.

Volume 2, Part 7, Chapter 5

3.1.14 Reference to Pt 1, Ch 2, Table 2.4.2 *now reads* Pt 1, Ch 2, Table 2.4.1.

Volume 2, Part 10, Chapter 1

1.1.7 Reference to sub-Section Pt 1, Ch 2,4.9 *now reads* Pt 1, Ch 2,4.8.

1.9.1 Reference to sub-Section Pt 1, Ch 2,4.9 *now reads* Pt 1, Ch 2,4.8.

1.10.1 Reference to Pt 1, Ch 2,Table 2.4.2 *now reads* Pt 1, Ch 2, Table 2.4.1.

1.11.8 Reference to sub-Section Pt 1, Ch 2,4.9 *now reads* Pt 1, Ch 2,4.8.

1.11.11 Reference to sub-Section Pt 1, Ch 2,4.9 *now reads* Pt 1, Ch 2,4.8.

8.1.1 Reference to sub-Section Pt 1, Ch 2,4.9 *now reads* Pt 1, Ch 2,4.8.

10.10.2 Reference to sub-Section Pt 1, Ch 2,4.9 *now reads* Pt 1, Ch 2,4.8.

Volume 2, Part 11, Chapter 1

3.3.11 Reference to Pt 1, Ch 2, Table 2.4.2 *now reads* Pt 1, Ch 2, Table 2.4.1.

5.2.1 Reference to sub-Section Pt 1, Ch 2,4.6 *now reads* Pt 1, Ch 2,4.5.

Volume 2, Part 11, Chapter 2

1.2.6 Reference to sub-Section Pt 1, Ch 2,4.12 *now reads* Pt 1, Ch 2,4.11.

2.6.3 Reference to sub-Section Pt 1, Ch 2,4.12 *now reads* Pt 1, Ch 2,4.11.

3.1.2(g) Reference to sub-Section Pt 1, Ch 2,4.12 *now reads* Pt 1, Ch 2,4.11.

5.2.1 Reference to sub-Section Pt 1, Ch 2,4.6 *now reads* Pt 1, Ch 2,4.5.

Volume 3, Part 1, Chapter 1

1.1.1 Reference to paragraph Vol 1, Pt 1, Ch 2,3.9.13 *now reads* Vol 1, Pt 1, Ch 2,3.9.14.

2.1.1 Reference to paragraph Vol 1, Pt 1, Ch 2,3.9.13 *now reads* Vol 1, Pt 1, Ch 2,3.9.14.

2.2.2 Reference to paragraph Vol 1, Pt 1, Ch 2,3.9.13 *now reads* Vol 1, Pt 1, Ch 2,3.9.14.

2.3.2 Reference to paragraph Vol 1, Pt 1, Ch 2,3.9.13 *now reads* Vol 1, Pt 1, Ch 2,3.9.14.

2.3.4(a) Reference to paragraph Vol 1, Pt 1, Ch 2,3.9.13 *now reads* Vol 1, Pt 1, Ch 2,3.9.14.

2.4.2 Reference to paragraph Vol 1, Pt 1, Ch 2,3.9.13 *now reads* Vol 1, Pt 1, Ch 2,3.9.14.

2.5.3 Reference to paragraph Vol 1, Pt 1, Ch 2,3.9.13 *now reads* Vol 1, Pt 1, Ch 2,3.9.14.

Volume 3, Part 1, Chapter 7

6.1.8 Reference to sub-Section Vol 2, Pt 1, Ch 2,4.19 *now reads* Vol 2, Pt 1, Ch 2,4.18.

9.1.12 Reference to sub-Section Vol 2, Pt 1, Ch 2,4.19 *now reads* Vol 2, Pt 1, Ch 2,4.18.

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